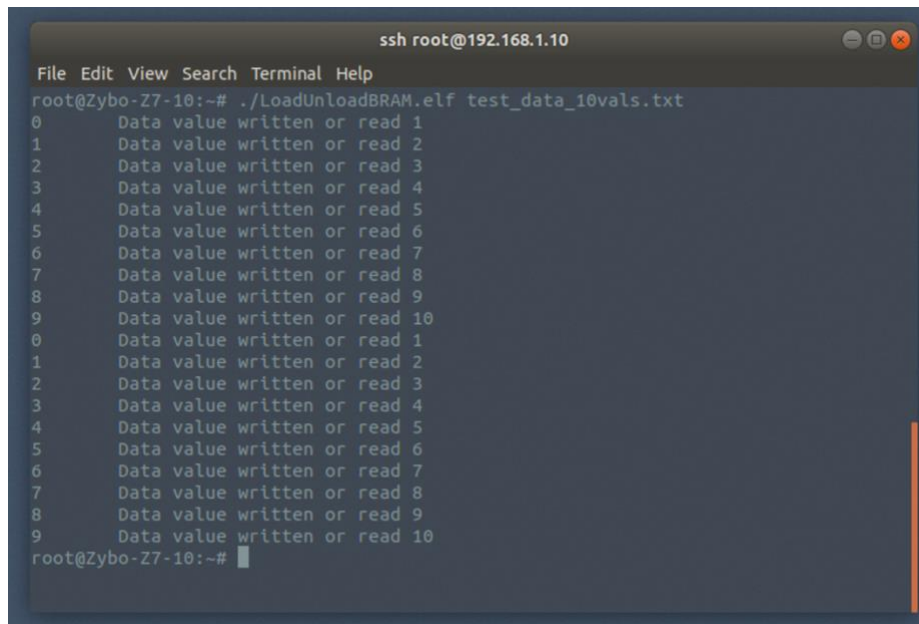
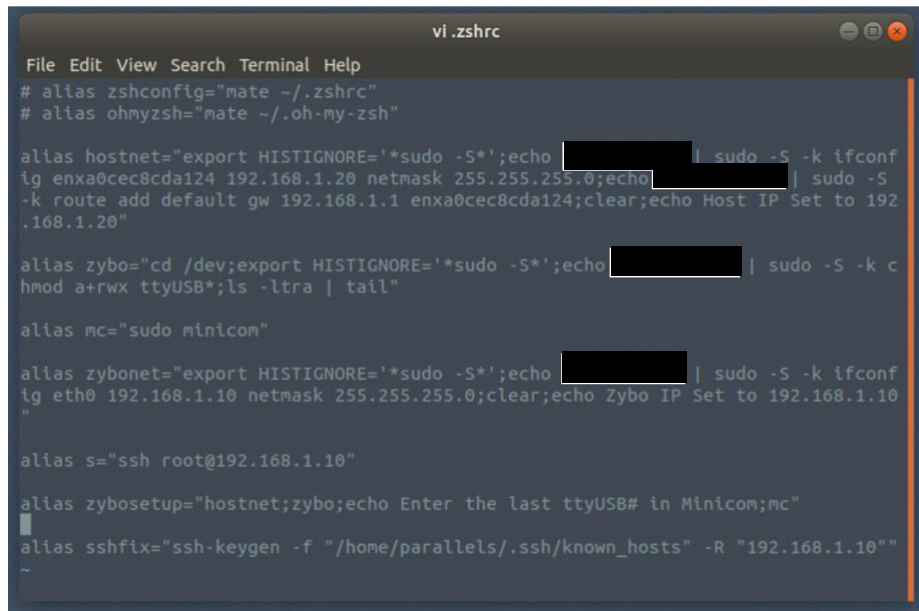


For Lab #7, we were tasked with taking the block diagram that we built in Labs 5 and 6, run SDK to generate an .elf (Linux executable file) from the C code provided, and to program our Zybo boards with this generated file. This will us to read and/or write a portion of the 8K 16-bit word BRAM. Passing a text file to this executable allows the C code to read the data file (also supplied) and transfer it, one 16-bit word at a time, to the GPIO register. As it does so, the VHDL state machine reads the GPIO register and stores it in the BRAM. Once the C code loads the memory with data, a second routine is called that simply unloads it, one 16-bit word at a time and prints the results in the terminal window (Figure 1).

In order to transfer the files to be run on the board, we were tasked with creating a network connection between the host machine and the Zybo. This task seemed to be the most difficult part of the process for most students; however, once mastered, I was able to set up various "alias" scripts to streamline the process (Figure 2).



```
ssh root@192.168.1.10
File Edit View Search Terminal Help
root@Zybo-Z7-10:~# ./LoadUnloadBRAM.elf test_data_10vals.txt
0      Data value written or read 1
1      Data value written or read 2
2      Data value written or read 3
3      Data value written or read 4
4      Data value written or read 5
5      Data value written or read 6
6      Data value written or read 7
7      Data value written or read 8
8      Data value written or read 9
9      Data value written or read 10
0      Data value written or read 1
1      Data value written or read 2
2      Data value written or read 3
3      Data value written or read 4
4      Data value written or read 5
5      Data value written or read 6
6      Data value written or read 7
7      Data value written or read 8
8      Data value written or read 9
9      Data value written or read 10
root@Zybo-Z7-10:~#
```



```
vi .zshrc
File Edit View Search Terminal Help
# alias zshconfig="mate ~/.zshrc"
# alias ohmyzsh="mate ~/.oh-my-zsh"

alias hostnet="export HISTIGNORE='*sudo -S*';echo [redacted] | sudo -S -k ifconf
ig enxa0cec8cda124 192.168.1.20 netmask 255.255.255.0;echo [redacted] | sudo -S
-k route add default gw 192.168.1.1 enxa0cec8cda124;clear;echo Host IP Set to 192
.168.1.20"

alias zybo="cd /dev;export HISTIGNORE='*sudo -S*';echo [redacted] | sudo -S -k c
hmod a+rwX ttyUSB*;ls -ltra | tail"

alias mc="sudo minicom"

alias zybonet="export HISTIGNORE='*sudo -S*';echo [redacted] | sudo -S -k ifconf
ig eth0 192.168.1.10 netmask 255.255.255.0;clear;echo Zybo IP Set to 192.168.1.10
"

alias s="ssh root@192.168.1.10"

alias zybosetup="hostnet;zybo;echo Enter the last ttyUSB# in Minicom;mc"
[redacted]
alias sshfix="ssh-keygen -f "/home/parallels/.ssh/known_hosts" -R "192.168.1.10"
~
```